ALASKA NON-NATIVE PLANT INVASIVENESS RANKING FORM

Botanical name: *Lapsana communis* L.
Common name: nipplewort
Assessors:

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Date: 3/3/2011
Date of previous ranking, if any: 4T

OUTCOME SCORE:

CLIMATIC COMPARISON

This species is present or may potentially establish in the following eco-geographic regions:

Pacific Maritime	Yes
Interior-Boreal	Yes
Arctic-Alpine	Yes

INVASIVENESS RANKING	**Total** (total answered points possible[1])	**Total**
Ecological impact	40 (40)	8
Biological characteristics and dispersal ability	25 (25)	4
Ecological amplitude and distribution	25 (25)	16
Feasibility of control	10 (10)	5
Outcome score	100 (100)[b]	33[a]
Relative maximum score[2]		**33**

[1] For questions answered "unknown" do not include point value for the question in parentheses for "total answered points possible."
[2] Calculated as a/b × 100

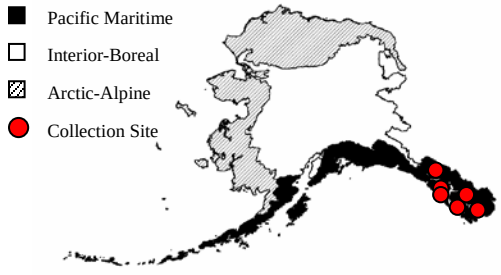
A. CLIMATIC COMPARISON

1.1. Has this species ever been collected or documented in Alaska?

☒ Yes - continue to 1.2
☐ No - continue to 2.1

1.2. From which eco-geographic region has it been collected or documented (see inset map)? Proceed to Section B. INVASIVNESS RANKING

☒ Pacific Maritime
☐ Interior-Boreal
☐ Arctic-Alpine



Documentation: *Lapsana communis* has been documented from the Pacific Maritime ecogeographic region of Alaska (Hultén 1968, AKEPIC 2011, UAM 2011).

2.1. Is there a 40 percent or higher similarity (based on CLIMEX climate matching, see references) between climates where this species currently occurs and:

a. Juneau (Pacific Maritime region)?
☐ Yes – record locations and percent similarity; proceed to Section B.
☐ No

b. Fairbanks (Interior-Boreal region)?
☒ Yes – record locations and percent similarity; proceed to Section B.
☐ No

c. Nome (Arctic-Alpine region)?
☒ Yes – record locations and percent similarity; proceed to Section B.
☐ No

If "No" is answered for all regions; reject species from consideration

Documentation: *Lapsana communis* is known to grow in many locations in Finland, Estonia, Belarus, and Russia that have 40% or greater climatic similarities with Fairbanks and Nome (CLIMEX 1999, Kravchenko and Budrevskaya 2005, NatureGate 2011).

B. INVASIVENESS RANKING

1. Ecological Impact

1.1. Impact on Natural Ecosystem Processes

a.	No perceivable impact on ecosystem processes	0
b.	Has the potential to influence ecosystem processes to a minor degree (e.g., has a perceivable but mild influence on soil nutrient availability)	3
c.	Has the potential to cause significant alteration of ecosystem processes (e.g., increases sedimentation rates along streams or coastlines, degrades habitat important to waterfowl)	7
d.	Has the potential to cause major, possibly irreversible, alteration or disruption of ecosystem processes (e.g., the species alters geomorphology, hydrology, or affects fire frequency thereby altering community composition; species fixes substantial levels of nitrogen in the soil making soil unlikely to support certain	10

native plants or more likely to favor non-native species)

e. Unknown U

Score **1**

Documentation: *Lapsana communis* likely has only minor impacts on ecosystem processes, as it is restricted to disturbed areas and has been noted for low aggressiveness in Alaska (AKEPIC 2011, UAM 2011).

1.2. Impact on Natural Community Structure

a. No perceived impact; establishes in an existing layer without influencing its structure 0

b. Has the potential to influence structure in one layer (e.g., changes the density of one layer) 3

c. Has the potential to cause significant impact in at least one layer (e.g., creation of a new layer or elimination of an existing layer) 7

d. Likely to cause major alteration of structure (e.g., covers canopy, eliminating most or all lower layers) 10

e. Unknown U

Score **3**

Documentation: *Lapsana communis* occurs at up to 30% ground cover in Alaska (AKEPIC 2011) and may increase the density of vegetation in disturbed areas. However, most infestations recorded in Alaska are associated with fill importation and occur at low densities (AKEPIC 2011).

1.3. Impact on Natural Community Composition

a. No perceived impact; causes no apparent change in native populations 0

b. Has the potential to influence community composition (e.g., reduces the population size of one or more native species in the community) 3

c. Has the potential to significantly alter community composition (e.g., significantly reduces the population size of one or more native species in the community) 7

d. Likely to cause major alteration in community composition (e.g., results in the extirpation of one or more native species, thereby reducing local biodiversity and/or shifting the community composition towards exotic species) 10

e. Unknown U

Score **1**

Documentation: *Lapsana communis* occurs at up to 30% ground cover in Alaska (AKEPIC 2011). However, because it is not highly aggressive in Alaska and is restricted to disturbed areas (AKEPIC 2011, UAM 2011), it likely causes only minor reductions in native plant populations.

1.4. Impact on associated trophic levels (cumulative impact of this species on the animals, fungi, microbes, and other organisms in the community it invades)

a. Negligible perceived impact 0

b. Has the potential to cause minor alteration (e.g., causes a minor reduction in nesting or foraging sites) 3

c. Has the potential to cause moderate alteration (e.g., causes a moderate reduction in habitat connectivity, interferes with native pollinators, or introduces injurious 7

components such as spines, toxins)

d. Likely to cause severe alteration of associated trophic populations (e.g., extirpation or endangerment of an existing native species or population, or significant reduction in nesting or foraging sites) 10

e. Unknown U

Score **3**

Documentation: *Lapsana communis* is edible to domestic cattle (Kravchenko 2009) and may be consumed by wild animals as well. Flowers are pollinated by flies, bees, moths, and butterflies (Plants for a Future 2010), and the presence of this species may alter native plant-pollinator interactions.

Total Possible 40

Total **8**

2. Biological Characteristics and Dispersal Ability

2.1. Mode of reproduction

a. Not aggressive (produces few seeds per plant [0-10/m^2] and not able to reproduce vegetatively). 0

b. Somewhat aggressive (reproduces by seed only [11-1,000/m^2]) 1

c. Moderately aggressive (reproduces vegetatively and/or by a moderate amount of seed [<1,000/m^2]) 2

d. Highly aggressive (extensive vegetative spread and/or many seeded [>1,000/m^2]) 3

e. Unknown U

Score **1**

Documentation: *Lapsana communis* reproduces by seeds. A single plant can produce 400 to 800 seeds (Cowbrough 2005, Faculty of Agricultural Sciences 2011).

2.2. Innate potential for long-distance dispersal (wind-, water- or animal-dispersal)

a. Does not occur (no long-distance dispersal mechanisms) 0

b. Infrequent or inefficient long-distance dispersal (occurs occasionally despite lack of adaptations) 2

c. Numerous opportunities for long-distance dispersal (species has adaptations such as pappus, hooked fruit coats, etc.) 3

d. Unknown U

Score **0**

Documentation: Seeds lack pappi (Hultén 1968) and have no specific adaptations for dispersal.

2.3. Potential to be spread by human activities (both directly and indirectly – possible mechanisms include: commercial sale of species, use as forage or for revegetation, dispersal along highways, transport on boats, common contaminant of landscape materials, etc.).

a. Does not occur 0

b. Low (human dispersal is infrequent or inefficient) 1

c. Moderate (human dispersal occurs regularly) 2

d. High (there are numerous opportunities for dispersal to new areas) 3

e.	Unknown	U
	Score	**2**

Documentation: *Lapsana communis* occurs mainly along roadsides in southeast Alaska (AKEPIC 2011), suggesting that seeds are spread by human activities.

2.4. Allelopathic

a.	No	0
b.	Yes	2
c.	Unknown	U
	Score	**0**

Documentation: No evidence suggests that *Lapsana communis* is allelopathic.

2.5. Competitive ability

a.	Poor competitor for limiting factors	0
b.	Moderately competitive for limiting factors	1
c.	Highly competitive for limiting factors and/or able to fix nitrogen	3
d.	Unknown	U
	Score	**0**

Documentation: *Lapsana communis* appears to have low aggressiveness in Alaska (AKEPIC 2011).

2.6. Forms dense thickets, has a climbing or smothering growth habit, or is otherwise taller than the surrounding vegetation.

a.	Does not grow densely or above surrounding vegetation	0
b.	Forms dense thickets	1
c.	Has a climbing or smothering growth habit, or is otherwise taller than the surrounding vegetation	2
d.	Unknown	U
	Score	**0**

Documentation: *Lapsana communis* does not form dense thickets or significantly overtop surrounding vegetation (Klinkenberg 2010).

2.7. Germination requirements

a.	Requires sparsely vegetated soil and disturbance to germinate	0
b.	Can germinate in vegetated areas, but in a narrow range of or in special conditions	2
c.	Can germinate in existing vegetation in a wide range of conditions	3
d.	Unknown	U
	Score	**0**

Documentation: *Lapsana communis* grows in agricultural fields, stream banks, roadsides, and shady disturbed areas in North America (Bogler 2006, Klinkenberg 2010).

2.8. Other species in the genus invasive in Alaska or elsewhere

a.	No	0

b.	Yes	3
c.	Unknown	U

Score **0**

Documentation: The *Lapsana* genus is monotypic (Pak and Bremer 1995).

2.9. Aquatic, wetland, or riparian species

a.	Not invasive in wetland communities	0
b.	Invasive in riparian communities	1
c.	Invasive in wetland communities	3
d.	Unknown	U

Score **1**

Documentation: *Lapsana communis* is known to grow along stream banks in North America (Bogler 2006).

Total Possible 25

Total **4**

3. Ecological Amplitude and Distribution

3.1. Is the species highly domesticated or a weed of agriculture?

a.	Is not associated with agriculture	0
b.	Is occasionally an agricultural pest	2
c.	Has been grown deliberately, bred, or is known as a significant agricultural pest	4
d.	Unknown	U

Score **2**

Documentation: *Lapsana communis* is a frequent but not abundant agricultural weed in Russia and Europe and is becoming more common in Ontario (Cowbrough 2005, Kravchenko 2009, NatureGate 2011).

3.2. Known level of ecological impact in natural areas

a.	Not known to impact other natural areas	0
b.	Known to impact other natural areas, but in habitats and climate zones dissimilar to those in Alaska	1
c.	Known to cause low impact in natural areas in habitats and climate zones similar to those in Alaska	3
d.	Known to cause moderate impact in natural areas in habitat and climate zones similar to those in Alaska	4
e.	Known to cause high impact in natural areas in habitat and climate zones similar to those in Alaska	6
f.	Unknown	U

Score **1**

Documentation: *Lapsana communis* grows in natural areas on Mt. Haleakala, Maui (Kitayama and Mueller-Dombois 1995). It is known to grow along stream banks in North America (Bogler 2006).

3.3. Role of anthropogenic and natural disturbance in establishment

a.	Requires anthropogenic disturbance to establish	0
b.	May occasionally establish in undisturbed areas, readily establishes in naturally disturbed areas	3
c.	Can establish independently of natural or anthropogenic disturbances	5
e.	Unknown	U

Score **3**

Documentation: Most infestations recorded in Alaska are associated with fill importation (AKEPIC 2011); however, plants near Sitka were found growing on a rocky upper beach fringe (UAM 2011), suggesting that this species can establish in naturally disturbed areas as well.

3.4. Current global distribution

a.	Occurs in one or two continents or regions (e.g., Mediterranean region)	0
b.	Extends over three or more continents	3
c.	Extends over three or more continents, including successful introductions in arctic or subarctic regions	5
e.	Unknown	U

Score **5**

Documentation: *Lapsana communis* is native to Europe and southwest Asia (Bogler 2006). It has been introduced to North America, New Zealand, and East Asia (Bogler 2006, Kravchenko 2009, Landcare Research 2011). This species is known to grow in arctic regions in western Russia (Kravchenko and Budrevskaya 2005).

3.5. Extent of the species' U.S. range and/or occurrence of formal state or provincial listing

a.	Occurs in 0-5 percent of the states	0
b.	Occurs in 6-20 percent of the states	2
c.	Occurs in 21-50 percent of the states and/or listed as a problem weed (e.g., "Noxious," or "Invasive") in one state or Canadian province	4
d.	Occurs in more than 50 percent of the states and/or listed as a problem weed in two or more states or Canadian provinces	5
e.	Unknown	U

Score **5**

Documentation: *Lapsana communis* grows in 37 states of the U.S. and much of Canada (USDA 2011). It is not considered a noxious weed in any states of the U.S. or provinces of Canada.

Total Possible 25
Total **16**

4. Feasibility of Control

4.1. Seed banks

a.	Seeds remain viable in the soil for less than three years	0
b.	Seeds remain viable in the soil for three to five years	2
c.	Seeds remain viable in the soil for five years or longer	3
e.	Unknown	U

Score **3**

Documentation: Seeds can remain viable for six years (Kravchenko 2009).

4.2. Vegetative regeneration

a.	No resprouting following removal of aboveground growth	0
b.	Resprouting from ground-level meristems	1
c.	Resprouting from extensive underground system	2
d.	Any plant part is a viable propagule	3
e.	Unknown	U

Score **0**

Documentation: As an annual plant, *Lapsana communis* does not resprout after the removal of the aboveground portion.

4.3. Level of effort required

a.	Management is not required (e.g., species does not persist in the absence of repeated anthropogenic disturbance)	0
b.	Management is relatively easy and inexpensive; requires a minor investment of human and financial resources	2
c.	Management requires a major short-term or moderate long-term investment of human and financial resources	3
d.	Management requires a major, long-term investment of human and financial resources	4
e.	Unknown	U

Score **2**

Documentation: Mowing before seed set can contain populations. Hand pulling effectively controls *Lapsana communis* (Kravchenko 2009). The following herbicides have proven effective in controlling this species in agricultural fields: dicamba, clopyralid, and atrazine and mixtures of dicamba and atrazine, bromoxynil and atrazine, diflufenzopyr and dicamba, and atrazine and 2, 4-D (Cowbrough 2005). Several years of monitoring may be necessary following treatment to control plants sprouting from the seed bank.

Total Possible	10
Total	**5**

Total for four sections possible	100
Total for four sections	**33**

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